

selected from titanium oxide, zirconium oxide and hafnium oxide in which compression strain is produced, and said semiconductor device is equipped with MOS transistors.

18. A semiconductor device comprising:

a semiconductor substrate,
gate insulators formed on said substrate, and
gate electrodes formed on said gate insulators,

wherein said gate insulators are comprised of titanium oxide as a main component having a rutile crystal structure in which compression strain is produced, and said semiconductor device is equipped with MOS transistors.

19. A semiconductor device comprising:

a semiconductor substrate,
gate insulators formed on said substrate, and
gate electrodes formed on said gate insulators,

said gate insulators being comprised of titanium oxide as a main component having a rutile crystal structure, and said semiconductor device being equipped with MOS transistors, wherein the thermal expansion coefficient of the main component material of said gate electrodes is greater than the linear expansion coefficient of said titanium oxide.

20. A semiconductor device comprising:

a semiconductor substrate;
gate insulators formed on said substrate, and
gate electrodes formed on said gate insulators,

wherein said gate insulators are comprised of titanium oxide as a main component having a rutile crystal structure in which compression strain is produced while tensile strain is produced in the gate electrode, and said semiconductor device is equipped

with MOS transistors.

21. A semiconductor device according to claim 17, wherein said insulator includes a film comprised of silicon oxide as a main component and an overlying film comprised of a material as a main component selected from titanium oxide, zirconium oxide and hafnium oxide.

22. A semiconductor device comprising:
a semiconductor substrate, and
MOS transistors formed on said substrate and each having a gate insulator and a gate electrode formed on said gate insulator, wherein a first MOS transistor has a gate insulator comprised of a material as a main component selected from titanium oxide, zirconium oxide and hafnium oxide, and a second MOS transistor has a gate insulator containing silicon oxide as a main component.

23. A semiconductor device according to claim 22, wherein the first MOS transistor is a transistor used for logic or memory circuits, and the second MOS transistor is a transistor used for I/O.

24. A semiconductor device comprising:
a semiconductor substrate,
gate insulators formed on said substrate, and
gate electrodes formed on said gate insulators,
wherein said gate insulators have a multilayered structure comprised of a material as a main component selected from titanium oxide, zirconium oxide and hafnium oxide and in which compression strain is produced, and said semiconductor device is equipped with MOS transistors. --